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Higher plant research underway at UM

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HIGHER PLANT RESEARCH
UNDERWAY AT UM
by
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MISSOULA--

Medicinal plant tissue cultures are currently being studied at the University of Montana with the hope that higher plant cells might someday prove to be useful tools in the production of valuable drugs.

Outlining the goals of his current research projects, Dr. Rustem S. Medora, an assistant professor of pharmacy at UM, explained that, in the past, bacteria and fungi have proved to be invaluable in the manufacture of antibiotics and other products of economic value.

"The concept of inducing cultures of higher plant cells to produce metabolites of drug value is novel and has unlimited future potential in research and industry," he said.

One application of the new technique of utilizing higher plants applies to cardiac drugs. The common foxglove (Digitalis purpurea) plant contains cardioactive compounds such as digitoxin which stimulate the heart and improve tonicity of the heart muscle, Dr. Medora said. Foxglove is a plant, native to Montana, which is produced in culture under laboratory conditions by professor Medora.

Dr. Medora's problem is to reproduce, from cultured cells and under laboratory conditions, the same active materials synthesized by plants in natural environment.

Seeds from plants like foxglove are sterilized chemically to remove bacteria, then germinated under proper aseptic environment. The germinated seedlings are "chopped up in bits" and put in artificial media containing over 50 ingredients, including coconut water.

One such ingredient is a plant hormone which prevents "differentiation," the cell process in higher organisms which creates organ systems like leaves, roots, stems and flowers.

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As the cells divide rapidly into "cancerous clumps," Dr. Medora attempts to stimulate the production of medicinal agents in larger quantities than may be found naturally in plants. Such a culture may grow indefinitely, making the drug available in places where the original plant is inaccessible.

Knowledge which the native Indians possess may be helpful in discovering plants of drug value.

Dr. Medora explained that "ethnobotany," the history of the cultural use of plants, is a useful technique in discovering medicinal agents long familiar to some cultures, but unfamiliar to modern man.

He said he believes the "witch doctor" knowledge of Indians may be helpful in identifying and locating certain plants presently unavailable to contemporary medicine.

The laboratory housed in the Chemistry-Pharmacy building is a unique facility.

"As far as we know," Dr. Medora explained, "we are the only people in the entire Rocky Mountain area applying higher plant tissue culture techniques for the specific purpose of producing drugs."

The Montana Heart Association, several pharmaceutical companies, and the UM Research Council have assisted Professor Medora's research.

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